THE COMPENSATORY THEORY OF BIMETALLISM.

THE well-known illustration of the Compensatory Theory given by W. Stanley Jevons, in his *Money and the Mechanism of Exchange*, is as follows: "Imagine two reservoirs of water, each subject to independent variations of supply and demand. In the absence of any connecting pipe the level of the water in each reservoir will be subject to its own fluctuations only. But if we open a connection, the water in both will assume a certain mean level, and the effects of any excessive supply or demand will be distributed over the whole area of both reservoirs. The mass of metals, gold and silver, circulating in Western Europe in late years, is exactly represented by the water in these reservoirs, and the connecting pipe is the law of the 7th Germinal, an xi, which enables one metal to take the place of the other as an unlimited legal tender." This passage has become almost classic. It is quoted by the highest bimetallic authorities as exactly illustrating the compensatory action and its effects, and to it bimetallists in general have pinned their faith in the double standard.

The essential difficulty in Mr. Jevons's illustration is that the two metals, gold and silver, in the two reservoirs, when they are connected by a pipe, are represented as flowing together and mingling homogeneously, like one substance, such as water. But gold and silver are not one and the same substance, and so they cannot mingle homogeneously like particles of one substance. Gold differs from silver, as water differs from air. Gold and silver are not, in fact, of equal capacity to serve monetary uses; they have different sources of supply; they differ in value relatively to bulk; they have different historical associations; they are preferred by commercial nations by no means with the same intensity. Therefore, when one, by reason of cheapness, displaces the other, it does not follow at all that the new demand for the cheapened metal will be exactly proportioned to the lessened demand for the dearer metal. In short, one cannot reason as if monetary demand would be impartially transferred from gold to silver, or from silver to gold, as if they were equal or the same for purposes of money. They are two substances with different qualities, not one homogeneous substance, as regards money uses. Hence the error of Mr. Jevons's analogy.

The Compensatory Theory may be stated as follows: When two metals are constituted legal tender to an unlimited amount, and coined indifferently in unlimited quantities at a fixed ratio of value, any cause

that tends to change the ratio of value of the two metals in the market from the mint ratio will, at the same time, through the operation of Gresham's Law, result in a compensatory action,—an increase in the demand for the cheapened metal and a decrease in the demand for the dearer metal,—which will tend to bring the market ratio of the two metals back to the mint ratio. From this statement we must conclude that in order to illustrate, with liquids, the true compensatory action, in the process of which one metal is driven out of circulation by the other, the two liquids can not mingle homogeneously. In Mr. Jevons's analogy his compensatory result is wrongly conditioned on the mingling of the two liquids.

However, we are not so much concerned with the correctness of Jevons's analogy as with the conclusions based on his illustration.

The acceptance of this theory, as given by his illustration, involves three broad conclusions :

1. Gold and silver are equal in regard to their capability for satisfying monetary desires.

2. The compensatory action involves a concurrent circulation of both gold and silver.

3. The compensatory action is then unlimited in its power, acting at all times and under all circumstances.

The first of these conclusions is a matter capable of historical disproof. The monetary movements of the past forty years show conclusively that among commercial nations gold is held to be far preferable to silver for monetary purposes.

In order to test the other conclusions let us, by means of a more perfect figure, endeavor to trace out the true compensatory action. In the accompanying diagram let $Q\ Q'$ represent the market in which the world's supply of gold and silver exists in liquid form, and into which the production of each is annually poured. Let x and x be planes dividing $Q\ Q'$ into two reservoirs, Q containing the world's supply of uncoined silver, Q' the supply of uncoined gold. Let x and x be impervious to liquids and immovable. Let the volume $M\ M'$ be within $Q\ Q'$, containing the world's supply of metallic money. Let $Y\ Y$ be a plane dividing $M\ M'$ into two reservoirs, M containing the silver money, M' the gold money. Let $Y\ Y$ be impervious to liquids, but free to move from side to side within $M\ M'$, without friction. Let O and O' be orifices allowing free passage between M and Q, M' and Q'. Let the process of entrance into M and M' transform the

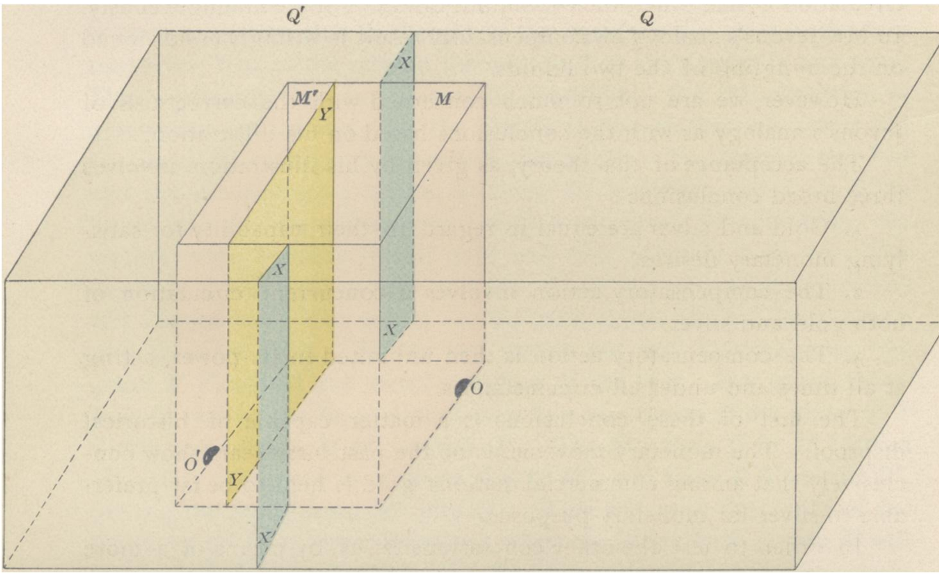

DIAGRAM ILLUSTRATING THE COMPENSATORY ACTION OF METALS IN THE BY-METALLIC THEORY.

metal into money and the process of exit from *M* and *M′* transform the money into metal. Let the values of the metals vary inversely as their quantities, and let *x* and *x* be so placed that when the metals are at the same height in *Q* and *Q′* the ratio of their values may be there represented as 1 to 15½. Then any rise or fall of metal in one volume, without a corresponding rise or fall in the other, must change the ratio. Now, suppose that the metals stand at the same height in *Q* and *Q′*, so that when concurrent coinage is established, the metals will flow into *M* and *M′*, and *Y Y* will be moved by pressure to stand in such a position that the height of the liquids is the same in the four reservoirs; that is, the ratio at the mint and in the market is 1 to 15½. This represents the ideal bimetallic condition. But this condition of quiescence cannot last; for the metals in the market are subject to continual fluctuations from outside conditions. To illustrate this fact and the compensatory action, let there be a sudden influx of silver liquid into *Q*. Immediately its height is increased, its value falls; the market value between it and gold will now stand at 1 to 16. The liquid in *Q* will tend to flow into *M*. Then the compensatory action will commence. The reason for the new figure which I have drawn now presents itself. As the two metals are not homogeneous, the plane *Y Y* cuts off any direct mingling of the two. Any effect, therefore, in reality, can be produced only by a movement of the plane *Y Y* within the volume *M M′* toward *O′*. The flow from *Q* to *M*, instead of raising the liquid in *M* above that in *M′*, will force *Y Y* toward *O′*, driving the liquid from *M′* into *Q′*. This will raise the height of the liquid in *Q′* (*i. e.*, lower its value), while the influx from *Q* into *M* will lower the height of liquid in *Q*. The two metals will thus come again to the same height (or ratio of value), but only by one metal pushing the other out of circulation. Now note the limit of this compensatory result. If equilibrium is not soon restored, *Y Y* reaches *O′*, gold has been entirely driven out, and there is no longer any communication between *Q* and *Q′*. We have now the single silver standard, and all fluctuations in *Q* are exactly duplicated in *M*, unaffected by the fact that coinage is legally (although not in fact) concurrent. Historically this has always been the result. The only way in which gold may again enter the mint is by becoming the cheaper metal. Thus, while the concurrent coinage law is not lessening the fluctuations of the money standard, it is at least making it possible that a poorer standard shall be substituted at any moment.

After this study of the compensatory action we are forced to conclude that—

1. The compensatory action means an alternating standard.

2. The compensatory effect is felt only during the time of alternation.

3. When the alternative standard has been reached, the compensatory action ceases, and the monetary standard is subject to all the market fluctuations of a single standard.

4. Compensatory action always results in the substitution of a lower standard, which is naturally the one liable to the most violent fluctuations.

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THE POPULATION OF JAPAN.

THE official census of Japan for 1891 presents some figures which are not devoid of interest. In the first place the following totals are submitted:

Houses, - - - - - -		7,806,369
People—Males, -	20,563,416	
Females, -	20,155,261—	40,718,677
Excess of males, -	408,155	

The above figures are exclusive of 4,631 foundlings and 1,037 "unregistered prisoners," and show an increase over 1890 of 317 houses and 265,216 people. If the same rate of increase has been maintained during the past year, the present population can not be far from 41,000,000.

If the population for 1891 be divided according to the three classes of Japanese society, the following proportion is shown:

Peers (*Kwazoku*), - - - -	3,844
Gentry (*Shizoku*), - - - - -	2,009,396
Commons (*Heimin*), - - -	38,705,437
Total, - - - - - -	40,718,677

The Empire of Japan is divided, for governmental purposes, into three *Fu* (Municipalities), forty-three *Ken* (Prefectures), and the Hokkaido, or Yezo, which is a sort of "Territory." The most populous of these political divisions is Nügata Ken, on the west coast, with